CLAIMS

1. A communication device for interconnection of first and second networks, of which at least the first network is a ring network over which traffic is transmitted in both clockwise and counterclockwise directions, the device comprising:

first and second interconnect modules, each such module adapted to receive outgoing data traffic on the first network and to convey the outgoing data traffic to the second network, and to receive incoming data traffic from the second network and to convey the incoming data traffic to the first network,

the first and second interconnect modules being in mutual communication so that while both of the modules are operational, the first module is configured to receive from the first network only the outgoing data traffic transmitted in the clockwise direction, while the second module is configured to receive from the first network only the outgoing data traffic transmitted in the counterclockwise direction, and so that when a fault occurs in one of the first and second modules, the other module receives a fault indication, causing the other module to receive substantially all of the outgoing data traffic and to convey the outgoing data traffic to the second network.

2. A device according to claim 1, wherein the first network is configured to carry the data traffic at a predetermined maximum data rate in each of the clockwise and counterclockwise directions, and wherein each of the modules is interfaced to receive the outgoing data

traffic at a data rate not substantially greater than the predetermined maximum.

3. A device according to claim 1, wherein both of the first and second modules are configured to transmit the incoming data traffic over the first network in both the clockwise and counterclockwise directions while both of the modules are operational, as well as when the fault occurs.

4. A device according to claim 1, wherein when the fault occurs in one of the modules, the other module is adapted to receive the outgoing data traffic transmitted in the both clockwise and the counterclockwise directions.

5. A device according to claim 4, wherein when the fault occurs in one of the modules, the other module is adapted to wrap the traffic between the clockwise and counterclockwise directions, away from the module in which the fault occurred.

6. A device according to claim 1, wherein each of the first and second modules is configured with Media Access Control (MAC) addresses assigned to both the first and second modules, and is controlled so that while both of the modules are operational, each of the modules receives only the outgoing data traffic destined to its own MAC address, and so that when the fault occurs in one of the modules, the other module receives the outgoing data traffic destined to both of the MAC addresses.

7. A device according to claim 1, wherein the first network comprises an access ring network, while the second network comprises a trunk network, and wherein the

first and second modules are configured to serve as a gateway node between the access ring network and the trunk network.

8. A device according to claim 1, wherein the first and second networks respectively comprise first and second ring networks, and wherein the interconnect modules are configured to convey and receive the traffic to and from the second network in a manner substantially similar to that in which the modules convey and receive the traffic to and from the first network.

9. A device according to claim 1, wherein the second network is not a ring network.

10. A communication device for interconnection of first and second networks, of which at least the first network is a ring network over which traffic is transmitted in both clockwise and counterclockwise directions, with a predetermined maximum data rate in each of the clockwise and counterclockwise directions, the device comprising:

first and second interconnect modules configured with Media Access Control (MAC) addresses assigned respectively to both the first and second modules, each such module being adapted to receive outgoing data traffic on the first network at a data rate not substantially greater than the predetermined maximum and to convey the outgoing data traffic to the second network, and to receive incoming data traffic from the second network and to convey the incoming data traffic to the first network,

the first and second interconnect modules being in mutual communication so that while both of the modules are operational, each of the modules receives only the

outgoing data traffic destined to its own MAC address, and so that when a fault occurs in one of the first and second modules, the other module receives a fault indication, causing the other module to receive the outgoing data traffic destined to both of the MAC addresses and to convey the outgoing data traffic to the second network.

11. A device according to claim 10, wherein the first network comprises an access ring network, while the second network comprises a trunk network, and wherein the first and second modules are configured to serve as a gateway node between the access ring network and the trunk network.

12. A device according to claim 10, wherein the first and second networks respectively comprise first and second ring networks, and wherein the interconnect modules are configured to convey and receive the traffic to and from the second network in a manner substantially similar to that in which the modules convey and receive the traffic to and from the first network.

13. A device according to claim 10, wherein the second network is not a ring network.

14. A method for communication between first and second networks, of which at least the first network is a ring network over which traffic is transmitted in both clockwise and counterclockwise directions, the method comprising:

coupling the first and second networks together via first and second interconnect modules, such that while both of the modules are operational, the first module receives outgoing traffic from the first network for

transmission over the second network only in the clockwise direction on the first network, while the second module receives outgoing traffic from the first network for transmission over the second network only in the counterclockwise direction on the first network; and

upon occurrence of a fault in one of the first and second modules, reconfiguring the other of the modules so as to receive substantially all of the outgoing traffic for transmission over the second network.

15. A method according to claim 14, wherein the first network is configured to carry the data traffic at a predetermined maximum data rate in each of the clockwise and counterclockwise directions, and wherein coupling the first and second networks comprises interfacing each of the modules to receive the outgoing traffic at a data rate not substantially greater than the predetermined maximum.

16. A method according to claim 14, wherein coupling the first and second networks comprises configuring both of the first and second modules to transmit the incoming traffic over the first network in both the clockwise and counterclockwise directions while both of the modules are operational, as well as upon occurrence of the fault.

17. A method according to claim 14, wherein coupling the first and second networks comprises assigning respective Media Access Control (MAC) addresses to the first and second modules and configuring each of the first and second modules with the MAC addresses of both of the modules, such that while both of the modules are operational, each of the modules receives only the outgoing traffic destined to its own MAC address, and

wherein reconfiguring the other of the modules comprises setting the other module to receive the outgoing traffic destined to both of the MAC addresses.

18. A method according to claim 14, wherein reconfiguring the other of the modules comprises reconfiguring the module to receive the outgoing traffic in both the clockwise and counterclockwise directions on the first network.

19. A method according to claim 18, wherein reconfiguring the other of the modules comprises wrapping the traffic between the clockwise and counterclockwise directions away from the module in which the fault occurred.

20. A method according to claim 14, wherein the first network comprises an access ring network, while the second network comprises a trunk network, and wherein coupling the first and second networks comprises coupling a gateway node between the access ring network and the trunk network.

21. A method according to claim 14, wherein the first and second networks respectively comprise first and second ring networks, and wherein coupling the first and second networks comprises configuring the modules to convey and receive the traffic to and from the second network in a manner substantially similar to that in which the modules convey and receive the traffic to and from the first network.

22. A method according to claim 14, wherein the second network is not a ring network.

23. A method for communication between first and second networks, of which at least the first network is a ring network over which traffic is transmitted in both clockwise and counterclockwise directions, with a predetermined maximum data rate in each of the clockwise and counterclockwise directions, the method comprising:

coupling the first and second networks together via first and second interconnect modules;

assigning respective Media Access Control (MAC) addresses to the first and second modules and configuring each of the first and second modules with the MAC addresses of both of the modules, such that while both of the modules are operational, each of the modules receives outgoing data traffic on the first network destined to its own MAC address at a data rate not substantially greater than the predetermined maximum and conveys the outgoing data traffic to the second network; and

upon occurrence of a fault in one of the first and second modules, setting the other module to receive the outgoing traffic destined to both of the MAC addresses and to convey the outgoing data traffic to the second network.

24. A method according to claim 23, wherein the first network comprises an access ring network, while the second network comprises a trunk network, and wherein coupling the first and second networks comprises coupling a gateway node between the access ring network and the trunk network.

25. A method according to claim 23, wherein the first and second networks respectively comprise first and second ring networks, and wherein coupling the first and

second networks comprises configuring the modules to convey and receive the traffic to and from the second network in a manner substantially similar to that in which the modules convey and receive the traffic to and from the first network.

26. A method according to claim 23, wherein the second network is not a ring network.